

REMARKS

Reexamination and reconsideration of the subject application are respectfully requested in light of the comments which follow:

In the Office Action dated June 22, 2007, the statement of the status of claims contained in the Office Action Summary is incorrect. Subsequent to applicants' previous response filed February 14, 2007, claims 1-18, 20-23, 25 and 29-42 were pending. Claims 35-39 were withdrawn as being directed to a non-elected invention. The claims have not been amended by the current response. Thus, claims 1-18, 20-23, 25 and 29-42 remain pending. Claims 35-39 are presumably still withdrawn. Claims 1-18, 20-23, 25, 29-34 and 40-42 remain pending and await further consideration on the merits.

CLAIM REJECTIONS UNDER 35 U.S.C. §102

Claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,165,399 to Güntherberg et al. (hereafter "*Güntherberg et al.*") on the grounds set forth in paragraph 3 of the Official Action. This rejection is respectfully traversed.

The present invention relates to methods and devices for manufacturing elastomer mixes. According to one aspect of the present invention, the elastomer can be present in a uniformly distributed form in a first fluid medium. Depending on the type of elastomer, the first fluid medium can be a solvent in which the elastomer has been dissolved, or where the elastomer can be present as an emulsion of an elastomer solution and a liquid not miscible with the solvent. If needed, the

elastomer can also be present as a suspension of elastomer particles and a liquid, or as a gelatinous bond in a solvent. See, e.g., paragraphs [0013]-[0014].

One advantage of the present invention is that the product containing high quantities of water or solvent is gradually dewatered as the product passes through a mixing extruder. This gradual dewatering makes it possible to process the product with an optimal viscosity, thus making it possible to keep the mechanical energy used for processing the product within optimal limits. This results in a less intensive heating of the product. Moreover, the presence of larger quantities of water or solvent in the product also moderates the temperature in the product to be processed in the extruder due to the high heating capacity of the liquid medium. See, e.g., paragraph [0039].

A method performed according to the principles of the present invention is set forth in claim 1. Claim 1 recites:

1. *A method for manufacturing an elastomer mixture for manufacturing rubber, comprising:
metering at least one elastomer to be processed for manufacturing the elastomer mixture into a mixing extruder; and
mixing and plasticizing and/or masticating the elastomer as the elastomer passes through the mixing extruder, the elastomer being present in a uniformly distributed form in a first fluid medium while being charged into the mixing extruder;
introducing a reinforcing material in a second fluid medium to the elastomer;
removing the first fluid medium and/or second fluid medium in several dewatering steps as the product passes through the mixing extruder; and
incorporating a filler in several incorporation steps as the product passes through the mixing extruder;
wherein the incorporation steps and dewatering steps alternate in succession.*

As readily apparent from the above, the method of the present invention requires metering at least one elastomer into a mixing extruder. The at least one

elastomer is uniformly distributed in a first fluid medium while being charged into the mixing extruder.

Güntherberg et al. fails to anticipate the method of claim 1.

A claim is properly rejected as anticipated only if each and every element of the claim is found in a single prior art reference. *Berdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 1628, 1631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). Moreover, claim elements in the prior art must be arranged in the same manner as required by the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The quality of a disclosure of an allegedly anticipatory reference must be sufficient to have placed a person of ordinary skill in the art in possession of the claimed invention. *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990).

In the grounds for rejection, it is asserted that:

The reference teaches that the elastomer is a moist solid containing up to about 60% by weight residual water (first fluid medium) (column 6, lines 60-67). It is the position of the examiner that, given the preparation step detailed by the reference and the description in columns 6-7 and the Examples, the elastomer is present in a uniformly distributed form in the first fluid medium.

Applicants respectfully traverse the Examiner's interpretation of the teachings of *Güntherberg et al.* Contrary to the assertions contained in paragraph 3 of the Official Action, the elastomer component A is described by *Güntherberg et al.* as being in the form of a moist solid and does not satisfy the limitations of claim 1 with respect to metering at least one elastomer into a mixing extruder, the first elastomer being uniformly distributed in a first fluid medium while being charged into the mixing extruder. In this regard, *Güntherberg et al.* discloses:

The water-moist elastomer component A containing up to 60% by weight of residual water is, as a rule, a moist solid. It is, for example, a graft rubber which was obtained by emulsion polymerization, precipitated and partially dewatered to a residual water content of up to 60% by weight, where the partial dewatering may be effected, for example, by filtration, settling out, pressing out, decanting, centrifuging or thermal drying. The elastomer content A containing residual water is fed to metering section 2 of the extruder. (Column 4, lines 63-column 5, line 4.) (Emphasis added.)

Any doubts whatsoever concerning the form of elastomer component A as described above are answered by the description of component A contained in the Examples of *Güntherberg et al.*:

The components A present as a moist powder was [sic] fed to the extruder via a solid metering means ESB 45 (Column 31, lines 7-8.) (Emphasis added.)

Thus, contrary to the assertions contained in the grounds for rejection, the elastomer component A which is described as being in the form of a "solid," "moist powder" does not satisfy the requirements of the method of claim 1 which requires introducing at least one elastomer into a mixing extruder while in the form of a uniformly distributed elastomer in a fluid medium. Reconsideration and withdrawal of the rejection is respectfully requested.

With respect to claims 2 and 3, it is further asserted in paragraph 3 of the Official Action that *Güntherberg et al.* teaches that the elastomer is in the form of an emulsion. Column 4, lines 64-67 of *Güntherberg et al.* is cited in support of this assertion. However, contrary to the assertion, *Güntherberg et al.* clearly fails to satisfy the requirements of claim 1, much less the requirements of claims 2 and 3. The referenced portion of *Güntherberg et al.* is reproduced above. As readily apparent, the elastomer component A of *Güntherberg et al.*, while being described "obtained by emulsion polymerization," it is clearly not in that form at the point and

time which it is fed into the mixing extruder, as required by claim 1. Instead, *Güntherberg et al.* quite clearly teaches that elastomer component A is subjected to significant dewatering, to such an extent that it is reduced "to a moist powder," before it is introduced into the mixing extruder. Therefore, the grounds for rejection of claims 2 and 3 are deficient in at least this additional respect.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claims 23 and 34 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Güntherberg et al.* in view of WO 02/30652 to Sturm et al. (hereafter "*Sturm et al.*") on the grounds set forth in paragraph 5 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Sturm et al. is cited as allegedly teaching degasification and crosslinking within the extruder. However, even if the teachings of *Sturm et al.* were applied in the manner suggested, the claim invention would not result. Namely, the method of claim 1 requiring the introduction of a first elastomer uniformly distributed in a liquid medium into a mixing extruder, *inter alia*, would not result. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 21 and 33 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Güntherberg et al.*, in view of U.S. Patent No. 5,158,725 to Handa et al. (hereafter "*Handa et al.*") on the grounds set forth in paragraph 6 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Handa et al. is cited as allegedly teaching as operating below the cure "vulcanizing temperature of the material" and peletizing the compound in elastomer. However, even if the teachings of *Handa et al.* were applied to *Güntherberg et al.* in

the manner suggested, the claimed invention would not result. Namely, *Handa et al.* fails to cure the deficiencies noted above in connection with the teachings of *Güntherberg et al.* Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Güntherberg et al.* as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, in view of U.S. Patent No. 6,200,509 to Neubauer et al. (hereafter "Neubauer et al.") on the grounds set forth in paragraph 7 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Neubauer et al. is cited as allegedly teaching the polymer obtained in a suspension process. This rejection is respectfully traversed. *Neubauer et al.* actually teaches away from the presently claimed invention. *Neubauer et al.* teaches formation of a synthetic rubber by a method which includes "feeding an crumb form elastomer or a granular elastomer which contains fines along with optionally one or more filler materials to a mixer/extruder." See, e.g., Abstract. Thus, *Neubauer et al.* quite clearly teaches supplying an elastomer component to a mixing extruder in the form of a solid. As explained above, claim 1 requires, *inter alia*, a method wherein a first elastomer component which is uniformly distributed in a first liquid medium is fed into the mixing extruder. Thus, *Neubauer et al.* clearly teaches away from the requirements of claim 1.

Moreover, *Neubauer et al.* does not cure the deficiencies with teachings of *Güntherberg et al.* which have been explained above. Namely, *Neubauer et al.* would not led one of ordinary skill in the art any closer to the claimed invention than *Güntherberg et al.* In fact, for the reasons explained above, *Neubauer et al.* would

have led one of ordinary skill in the art away from utilizing a method wherein at least one elastomer component is introduced into a mixing extruder in the form of a uniformly dispersed elastomer and liquid medium.

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Güntherberg et al.* as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, and further in view of U.S. Patent No. 5,501,804 to Hall et al. (hereafter "*Hall et al.*") on the grounds set forth in paragraph 8 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Hall et al. is cited as allegedly teaching an elastomer gel composition. This assertion is respectfully traversed. Namely, *Hall et al.* would not lead one of ordinary skill in the art any closer to the presently claimed invention than the teaching of *Güntherberg et al.* *Hall et al.* is directed to a apparatus and process for blending elastomer particulates and solution into a uniform mixture. However, *Hall et al.* contains no teaching whatsoever with regard to what form an elastomer component should be introduced into a mixing extruder. As explained above, *Güntherberg et al.* quite clearly teaches dewatering the elastomer component used therein prior to introducing into the mixing extruder. *Hall et al.* does not nothing to lead one of ordinary skill in the art any closer to the requirements of claim 1. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

Claims 9 and 10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Güntherberg et al.* as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, and further in view of U.S. Patent No. 4,927,587 to Takahashi et al. (hereafter "*Takahashi et al.*") on the grounds set forth in paragraph 9 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Takahashi et al. is cited as allegedly teaching wet milled silica as a component to silicon rubber and introduction of the silica as a suspension. However, even if the teachings of *Takahashi et al.* where applied in the manner suggested, the claimed invention would not result. Namely, the method of claim 1 requiring the introduction of first elastomer component which is uniformly dispersed in a fluid medium into a mixing extruder would not result from the combined teachings of *Güntherberg et al.* and *Takahashi et al.* Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 11-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Güntherberg et al.* as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, in view of *Takahashi et al.*, and in further view of U.S. Patent No. 5,158,784 to Semmekrot (hereafter "Semmekrot") on the grounds set forth in paragraph 10 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Semmekrot is cited as allegedly teaching a mixing or milling device having a stator and rotor in coaxial relationship, and the pen mixer where the pens are arranged in axial planes over the interior surface of a stator. However, even if the teachings of *Semmekrot* were applied in the manner suggested, the claimed invention would not result. Namely, the teachings of *Semmekrot* fail to cure the deficiencies noted above present in the teachings of *Güntherberg et al.* Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 15-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Güntherberg et al.* as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, in view of *Takahashi et al.* and *Semmekrot*, and in further view of U.S. Patent

No. 5,029,760 to Gamblin (hereafter "*Gamblin*") on the grounds set forth in paragraph 11 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Gamblin is cited as allegedly teaching a ball mill and a centrifugal mill. However, even if the teachings of *Gamblin* were applied in the manner suggested, the claimed invention would not result. Namely, the teachings of *Gamblin* fail to cure the deficiencies previously noted above in connection with the teachings of *Güntherberg et al.* Thus, reconsideration and withdrawal of the rejection is respectfully requested.

Claims 9, 25 and 30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Güntherberg et al.* as applied to claims 1-3, 6-9, 17-18, 20, 22, 29, 31-32 and 40-42, in view of U.S. Patent No. 5,151,026 to Andersen et al. (hereafter "*Andersen et al.*") on the grounds set forth in paragraph 12 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Andersen et al. is cited as allegedly teaching a method of removing liquid from non-liquid material, and a second extruder transversed to the first extruder functioning as a "drag flow force." The non-liquid material including elastomers and other particulate or comminuted substances such as water cone pulp. However, even if the teachings of *Andersen et al.* were applied in the manner suggested, the claimed invention would not result. Namely, *Andersen et al.* fails to cure the deficiencies previously noted above in connection with the teachings of *Güntherberg et al.* Reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: December 26, 2007

By:


Scott W. Cummings
Registration No. 41,567

P.O. Box 1404
Alexandria, VA 22313-1404
703 836 6620